APPLICATION FOR UNITED STATES LETTERS PATENT

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STORAGE COMPARTMENT, AND RELATED COMPUTER SYSTEMS AND METHODS

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STORAGE COMPARTMENT, AND RELATED COMPUTER SYSTEMS AND METHODS

CROSS-REFERENCED APPLICATIONS

[1] This application is related to the following patent applications: U.S. Utility Patent Application serial no. ..... titled STORAGE COMPARTMENT WITH POSITIONABLE HOLDER FOR HOLDING A COMPACT DISC, attorney docket number 200314060-1 (1964-45-3), filed on 12 March 2004; U.S. Utility Patent Application serial no. ..... titled HOUSING HAVING A CABLE CONDUIT AND RELATED SYSTEMS AND METHODS, attorney docket number 200314056-1 (1964-49-3), filed on 12 March 2004; U.S. Design Patent Application serial no. ..... titled PORTION OF A HOUSING FOR PROCESSING CIRCUITRY OR OTHER SIMILAR ITEM, attorney docket number 200314058-1 (1964-47-5), filed on 12 March 2004; and U.S. Design Patent Application serial no. ..... titled POWER SWITCH FOR PROCESSING CIRCUITRY OR OTHER SIMILAR ITEM, attorney docket number 200402715-1 (1964-47-6), filed on 12 March 2004, which are incorporated by reference.

BACKGROUND

[2] Many computer systems include processing circuitry for performing various computing functions, such as receiving and generating data and executing instructions, and include one or more portable devices, such as, for example, a personal data assistant (PDA) and/or a camera, that may be coupled to the circuitry. When a portable device is coupled to the processing circuitry, the circuitry can write data to or read data from the device, or otherwise control the operation of the device.

[3] **FIG. 1** is a perspective view of a computer system ***10***, which includes a housing ***12*** that protects processing circuitry (not shown) located inside the housing, a portable device ***14*** (here, a PDA), and a cable ***16*** that couples the PDA

to the circuitry via an external connector (not shown). When the PDA ***14*** is coupled to the processing circuitry, it is typically set on top of the housing ***12***. The computer system ***10*** also includes a storage device ***18*** that reads data stored on a removable storage medium and that writes data to the medium, and a storage compartment ***20*** designed to store one or more removable storage media ***22*** when the media are not being used. For example, the storage device ***18*** may be a disc drive, such as a compact disc read-write (CDRW) drive and/or a digital versatile disc (DVD) drive, that transfers data to and from the removable storage media ***22***, such as, for example, a compact disc or a dvd, after the media has been inserted into the drive. The storage compartment ***20*** includes a support ***24*** with a shaft ***26*** to hold the compact disc ***22*** in an interior ***28*** of the compartment. To store the compact disc ***22*** in the compartment ***20***, one typically pushes a hole ***30*** of the disc onto the shaft ***26***.

[4] Unfortunately, when the PDA ***14*** is placed on top of the housing ***12***, the PDA is exposed and susceptible to inadvertent contact with one's arm, hand or other object. Therefore, because the PDA ***14*** is not secured to the housing ***12***, one may inadvertently knock the PDA over and/or off the housing and, thus, may inadvertently damage the PDA.

[5] One way to protect the PDA ***14*** is placing the PDA in the storage compartment ***20***, but this typically will not adequately protect the PDA. Because the storage compartment ***20*** is designed to store one or more removable storage media ***22***, not a device that is typically heavier and bulkier, the storage compartment typically does not have enough space to store the PDA ***14***. For example, the support ***24*** in the storage compartment ***20*** may occupy much of the space that the PDA ***14*** would otherwise occupy if stored in the compartment. Thus, when the PDA ***14*** is placed in the storage compartment ***20***, a portion of the PDA typically remains exposed and susceptible to inadvertent contact.

SUMMARY

In one aspect of the invention, a storage compartment of a housing includes a body having an interior and a passage operable to allow an item disposed within the interior to be communicatively coupled to another item outside the interior, and a lid. The body includes a bottom and a sidewall that define the interior in which one or more items, such as a storage medium or a portable device, may be stored. The lid may be moved relative to the body to open and close the storage compartment. When opened, one may insert or remove an item from the storage compartment, and when closed, an item located in the storage compartment may be protected against inadvertent contact. With the storage compartment, one may securely and safely store a PDA, for example, that is coupled to processing circuitry of a computer system.

In another aspect of the invention, a storage compartment of a housing includes a body having an interior, a bottom and a sidewall that define the interior, and a lid having an opening operable to allow access to an item disposed within the interior. With the opening in the lid, one may store an item that is larger than the interior by allowing the item to protrude through the opening. In addition, one may store a coupler in the interior and couple a device to the coupler through the opening.

BRIEF DESCRIPTION OF THE FIGURES

[6] **FIG. 1** is a perspective view of a conventional computer system that includes a PDA placed on top of the system's housing.

[7] **FIG. 2** is a perspective view of a computer system that incorporates a storage compartment according to an embodiment of the invention.

[8] **FIG. 3** is a perspective view of the storage compartment in **FIG. 2** with a top in an open position according to an embodiment of the invention.

[9] **FIG. 4** is a side view of a coupling element in **FIG. 3** that couples the top to the body of the storage compartment in **FIGS. 2 and 3**, according to an embodiment of the invention.

[10] **FIG. 5** is a perspective view of a storage compartment according to another embodiment of the invention.

DETAILED DESCRIPTION

[11] **FIG. 2** is a perspective view of a computer system ***40*** that includes a storage compartment ***42*** according to an embodiment of the invention. The storage compartment ***42*** may be incorporated into a housing ***44*** of the computer system ***40*** as shown, or the storage compartment may be separate from the system. The storage compartment ***42*** includes a body ***46*** having a bottom ***48*** and a side ***50*** that define an interior ***52*** in which one or more items (not shown) may be securely stored. For example, one or more portable electronic devices, such as a PDA, personal information manager (PIM), a camera, and/or camera docking station, may be stored in the interior, as well as removable storage media. The storage compartment ***42*** also includes a lid ***54*** and a coupling element ***56*** (discussed in greater detail in conjunction with **FIG. 3**) to couple the top to the body ***46*** and allow one to open and close the compartment by moving the top relative to the body. When the storage compartment ***42*** is closed as illustrated here by the lid ***54*** shown in dashed lines, an item stored in the interior ***52*** is protected against being inadvertently knocked over and/or off the housing ***44***. Thus, with the storage compartment ***42***, one may securely store a PDA, for example, that is coupled to (or uncoupled from) processing circuitry (not shown) of the system ***40***.

[12] Although the storage compartment ***42*** is shown located along the top ***55*** of the housing ***44***, the storage compartment may be located along the sides of the housing, or along the front of the housing ***44*** similar to the storage compartment ***20*** of the computer system ***10*** in **FIG. 1**. When located along the sides or front of the housing ***44***, the storage compartment ***42*** may include an item retention component, such as, for example, a strap (not shown) to help retain an item in the compartment. In addition, although the computer system ***40*** is shown in **FIG. 2** with the housing ***44*** in a tower configuration, the housing may be in a desktop configuration.

[13] Still referring to **FIG. 2**, the storage compartment ***42*** may also include a locking element ***58*** (discussed in greater detail in conjunction with **FIG. 3**) to retain the lid ***54*** in a position relative to the body ***46***. For example, in one embodiment, the locking element ***58*** may retain the lid ***54*** in the closed position (dashed line), that is, the position where the lid is parallel to the top ***55*** and, thus, prevents access to the storage compartment. Thus, in the closed position, the lid ***54*** forms a barrier between the interior ***52*** and the outside environment above the interior ***52*** to prevent objects, such as, for example one's arm, from contacting an item stored in the interior. In the open position (solid line), the lid ***54*** allows one to remove an item stored in the interior ***52***, or insert an item into the interior. By retaining the lid ***54*** in the closed position, the locking element ***58*** reduces the chance that the lid may be inadvertently moved to an open position. Thus, the storage compartment ***42*** can more securely store and better protect an item stored in the interior ***52***.

[14] Still referring to **FIG. 2**, one or more of the sides ***50a – 50d*** may include an passage ***60*** to allow a cable ***62*** to couple an electronic device (not shown in **Fig. 2**) to a processing circuitry (not shown) of the computer system ***40***. With the passage ***60***, one may store a portable electronic device such as, for example, a PDA, in the storage compartment ***42*** to protect the PDA while the processor reads or writes data to the PDA. In one embodiment, the passage ***60*** may be located in the back side ***50a***. The passage ***60*** may also be aligned with an opening (not shown) of a conduit ***66*** that reduces the exposure of the cable ***62*** as it extends from the PDA to a connector, which is typically located on the back (not shown) of the housing ***44***. The conduit ***66*** is further discussed in U.S. Patent Application Serial Number ..... titled HOUSING HAVING A CABLE CONDUIT AND RELATED SYSTEMS AND METHODS, and filed ....., which is incorporated by reference. In operation, one may insert the PDA into the storage compartment ***42***, couple the cable ***62*** to the PDA, and close the lid ***54*** to protect the PDA.

[15] Still referring to **FIG. 2**, the storage compartment ***42*** may also include a positionable post ***68*** that may be positioned relative to the body ***46*** to retain one

or more storage media (not shown in **Fig. 2**) such as compact discs, in the compartment, and that may be re-positioned to store other items, such as a PDA, in the compartment. For example, in one embodiment, the post may include a first component ***70*** and a second component ***72*** that may be positioned independently of each other. When each component ***70*** and ***72*** is positioned in a respective first position, each component lies in a receptacle ***74*** substantially parallel to the bottom ***48*** of the compartment ***42***. In the receptacle ***74*** the components ***70*** and ***72*** do not extend into the interior ***52***, thus allowing one to store items, such as a PDA, other than a compact disc. When each component ***70*** and ***72*** is positioned in a respective second position (not shown), each component extends into the interior ***52*** substantially perpendicular to the bottom ***48***. In the second position the components ***70*** and ***72*** form a post that may retain one or more storage media by engaging a center hole of the media. The positionable post ***68*** is further discussed in U.S. Patent Application Serial Number ..... titled STORAGE COMPARTMENT WITH POSITIONABLE POST FOR HOLDING A COMPACT DISC AND RELATED SYSTEMS AND METHODS, and filed ....., which was previously incorporated by reference.

[16] **FIG. 3** is a perspective view of the storage compartment ***42*** in **FIG. 2** with the lid ***54*** in an open position according to an embodiment of the invention. **FIG. 4** is a side view of the coupling element ***56*** in **FIGS. 2** and **3**, according to an embodiment of the invention.

[17] Referring to **FIGS. 3** and **4**, the coupling element ***56*** couples the lid ***54*** to the body ***46*** and allows one to move the lid ***54*** relative to the body ***46*** to open and close the compartment ***42***. In one embodiment, the coupling element ***56*** may be a hinge ***76*** that releasably couples the lid ***54*** to the back side ***50a***. The hinge ***76*** may include a shaft ***78***, and a receiver ***80*** that retains the shaft and allows the shaft to rotate about the shaft's axis ***82***. Thus, one pivots the lid ***54*** relative to the back ***50a*** to open and close the storage compartment ***42***. To retain the shaft ***78***, the receiver ***80*** includes a receptacle ***84*** to restrain movement of the shaft in the X direction, and a cantilevered member ***86*** to restrain movement of the shaft in the Y direction. The cantilevered member ***86*** includes an end ***88*** located above the

receptacle ***84*** a distance that is less than the diameter of the shaft, and thus, the member urges the shaft to remain in the receptacle. To separate the shaft ***78*** from the receiver ***80***, and thus release the lid ***54*** from the back ***50a***, one moves the end ***88*** away from the receptacle ***84*** and removes the shaft from the receptacle. To engage the shaft ***78*** with the receiver ***80***, one moves the end ***88*** away from the receptacle ***84*** and inserts the shaft into the receptacle.

[18] Other embodiments are contemplated. For example, the hinge ***76*** may couple the lid ***54*** to other areas of the body ***46***, such as the sides ***50a – 50b*** (**FIG. 2**) and/or the bottom ***48***. In another example, the hinge ***76*** may permanently couple the lid ***54*** to the body ***46***. In yet another example, the coupling element ***56*** may include a track that the lid ***54*** slides on to open and close the storage compartment ***42***.

[19] Still referring to **FIG. 3**, the locking element ***58*** retains the lid ***54*** in a position relative to the body ***46***. For example, in one embodiment, the locking element ***58*** retains the lid ***54*** in a closed position, and includes two locking-element protrusions ***90*** (only one shown for clarity) and two locking-element receptacles ***92*** (only one shown for clarity). When the lid ***54*** is closed, each locking element protrusion ***90*** is aligned with a respective one of the locking-element receptacles ***92***, and urged toward their respective receptacles ***92*** by a cantilevered post ***94*** to engage the receptacles. With both locking-element protrusions ***90*** inserted into a locking-element receptacle ***92***, the locking element ***58*** retains the body ***38*** in the closed position. To unlock the lid ***54***, one pulls and/or pushes the top with sufficient force to cause the locking-element receptacles ***92*** to urge the respective locking-element protrusions ***90*** toward each other, and thus out of the receptacles.

[20] Other embodiments are contemplated. For example, the locking element ***58*** may include one or more than two locking-element protrusions and corresponding locking-element receptacles. In another example, the locking element ***58*** may include a screw, snap and/or strap to retain the lid ***54*** at the closed position. In yet another example, the locking element ***58*** may retain the lid ***54*** in a

position relative to the body ***46*** where the lid ***54*** does not close the storage compartment ***42***.

[21] Still referring to **FIG. 3**, the storage compartment ***42*** may be made of any desirable material, and sized and formed as desired. For example, in one embodiment the storage compartment ***42*** is formed by casting conventional plastic in a mold, is square shaped and approximately one inch deep. The lid ***54*** includes an outer surface (not shown) that is substantially flat and extends over substantially all of the interior ***52*** when closed. The lid ***54*** may also support an item when the lid ***54*** is closed, and thus, one may place one or more items on the lid ***54*** and store one or more items in the storage compartment ***42*** at the same time.

[22] Other embodiments are contemplated. For example, the storage compartment ***42*** may have other shapes, such as circular, rectangular or polygonal, and may be more or less than one inch deep. In another example, the lid ***54*** may extend over only a portion of the interior ***52***. In yet another example, the lid may include a receptacle in the outer surface sized to receive and retain an item, or the outer surface may be concave or convex.

[23] **FIG. 5** is a perspective view of a storage compartment ***100*** that includes a lid ***102*** having an opening ***104*** according to another embodiment of the invention. The lid ***102*** may include a cover (not shown) to open and close the opening; or the lid may not include a cover. The opening ***104*** may be any shape and size desired to allow one to access an item stored in the storage compartment ***100***. This may be desirable to store an item that is larger than the interior (not shown) of the storage compartment ***100***, such that the item can protrude through the opening ***104***. This may also be desirable to store a coupler in the storage compartment ***100*** and couple a device to the coupler through the opening ***104***.

[24] For example, one may store a camera docking station ***106*** that may be used to couple a camera ***108*** to the processing circuitry and/or a power source (not shown). When stored in the storage compartment ***100***, the camera docking station ***106*** may be coupled to the circuitry via a cable (not shown) as previously

discussed in conjunction with **FIG. 2**. When the circuitry is coupled to the camera ***108***, the circuitry may write and/or read data from the camera to generate a picture, and the power source may recharge the camera's batteries. To couple the camera ***108*** to the circuitry and/or power source, a plug (not shown) of the docking station ***106*** is typically inserted into a receptacle (not shown) of the camera ***108***. Thus, when the camera is frequently used, one can easily engage and disengage the camera's receptacle from the docking station's plug.

[25] Without the opening ***104***, one would have to move the lid ***102*** to an open position to engage the camera's receptacle with the docking station's plug. If the camera is then knocked over, the docking station could easily follow, and thus both the camera and the docking station could be damaged. With the opening ***104***, however, one can couple the camera ***108*** to the docking station ***106*** while the docking station is safely stored in the storage compartment ***100*** and the lid ***102*** is locked in the closed position.

[26] The preceding discussion is presented to enable one skilled in the art to make and use the invention. Various modifications to the disclosed embodiments will be readily apparent to those skilled in the art, and the generic principles herein may be applied to other embodiments and applications without departing from the spirit and scope of the present invention. Thus, the present invention is not intended to be limited to the embodiments shown, but is to be accorded the widest scope consistent with the principles and features disclosed herein.